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CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 FIFTH AVENUE
SUITE 2800
SEATTLE, WA 98101-2347

EXAMINER	
AHMED, SALMAN	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/083,128	BAVANT ET AL.	
	Examiner	Art Unit	
	SALMAN AHMED	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/30/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-7 and 9-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1, 2, 4-7, 9, 10, 18 and 19* is/are allowed.

6)☒ Claim(s) *11-17,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *5/30/2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 2, 4-7 and 9-21 are pending.

Claims 3 and 8 have been cancelled by the Applicant.

Claims 11-17 and 20-21 are rejected.

Claims 1, 2, 4-7, 9, 10, 18 and 19 are allowed.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 15-17 and 21 are rejected under second paragraph of 35 U.S.C. 112.

Claim 15 recites the limitation "the terminating terminal" in line 14. There is insufficient antecedent basis for this limitation in the claim.

3. Claim 14 is rejected under second paragraph of 35 U.S.C. 112.

Claim 14 recites the limitation "the several virtual lines" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 11 and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Cai et al. (US PAT 6134246, hereinafter Cai).

In regards to claim 11, Cai anticipates *an apparatus* (Figures 4, 5 and 6, ATM switch 20) *for data transmission between an originating terminal* (Figures 3-6, element 20) *and a terminating terminal* (Figures 3-5, element 50) *in a communications network* (Figures 4, 5 and 6, ATM network) *comprising at least one low-bit-rate artery* (Figures 4 and 5, any one of links 40) *and at least one standard-bit-rate artery* (Figures 4 and 5, links 30 and 60), *wherein the apparatus comprises a multiplexer device* (Figures 4, 5 and 6, ATM switch 20) *having a packetization* (ATM or AAL5 packetizaiton) *function and a switching function* (Figures 4, 5 and 6, ATM switch 20), *wherein the switching function of the multiplexer device configured to switch packets transmitted in basic transmission units according to an adaptation layer protocol among several virtual lines* (column 6 line 59, T1 virtual connections (VCs)) *constituted by connections in multiplexed or non-multiplexed mode* (column 5 lines 46-67, ATM cells are received by the first ATM switch, such as Samsung STARacer ATM switch, over an OC-3 communication link 30. A routing table (RT) 300 then forwards the received ATM cells to a first Segmentation and Re-assembly (SAR) module or chip 310. A first application module 330 associated with the SAR module 310 then assembles the cells into an AAL5 packet and performs a CRC32 check. If the assemble packet is a "good" packet, the SAR module 310 then interrupts an associated central processing unit (CPU) 320 and places the assembled AAL5 packet into a first designated memory location 340. The CPU 320 then adds a

sequence number to the placed Protocol Data User (PDU) or AAL5 packet and selects a T1 communication link 40 to communicate the packet. While selecting an outgoing communication link, the CPU selects a T1 link with the lowest traffic load using a load-balancing algorithm. The PDU or AAL5 packet with the sequence number stored therein is then communicated back down to the SAR module 310. The SAR module 310 de-assembles the user packet into a number of ATM cells and communicates all of the de-assembled ATM cells associated with the particular user packet over the selected T-1 communication link 40), *and wherein the data transmitted on the at least one standard-bit-rate artery* (Figures 4 and 5, links 30 and 60) *is multiplexed onto the at least one low-bit-rate artery* (Figures 4 and 5, any one of T1 link 40, TITLE: Inverse multiplexing within asynchronous transfer mode communication networks and abstract, Software inverse multiplexing within an Asynchronous Transfer Mode (ATM) communication network is provided by a first ATM switch receiving a stream of ATM cells over a high bandwidth communication link. A Segmentation and Re-assembly (SAR) module associated with the first ATM switch thereafter reassembles the received ATM cells into corresponding user packets. Control data identifying the sequence of assembled user packets are added to each user packet and de-assembled into corresponding ATM cells. The de-assembled ATM cells are then communicated over a plurality of low bandwidth communication links (i.e. multiplexed) to a second ATM switch. Column 2 lines 20-24, The present invention provides a method and apparatus for inverse multiplexing a stream of asynchronous transfer mode (ATM) cells received from a high-bandwidth communication link over a plurality of low-bandwidth

communication links), *and an adaptation unit* (figure 4 and 5, element 210) *associated with the terminating terminal, wherein the adaptation unit is configured to*: *extract the packets from the basic transmission units* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner); *determine whether any packet in the basic transmission units has been lost* (column 19 lines 56-63, one problem the receiver has to deal with is to recover the sequence of the AAL5 packets once they are received out-of-order over a plurality of VCs. The nature of the ATM transmission is such that it is allowed to lose an AAL5 packet, but is not allowed to receive the packets out of order. Accordingly, the receiver needs to recognize when a packet has been lost or delivered a bit late and properly re-synchronize the received packets); *and extract the data from the packets* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1

communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner).

In regards to claims 15 and 16 Cai anticipates *a network* (Figures 4, 5 and 6, ATM network) *configured to convey data between at least two terminals* (an originating terminal, Figures 3-6, element 20; and a terminating terminal Figures 3-5, element 50), *the network comprising one or more low-bit-rate arteries* (Figures 4 and 5, any one of links 40); *one or more standard-bit-rate arteries* (Figures 4 and 5, links 30 and 60), a multiplexer device (Figures 4, 5 and 6, ATM switch 20 with multiplexing functionality) *having a packetization function* (ATM or AAL5 packetizaiton) *and a switching function*, (Figures 4, 5 and 6, ATM switch 20) *wherein the switching function of the multiplexer device is configured to switch packets transmitted in basic transmission units among several virtual lines* (column 6 line 59, T1 virtual connections (VCs)) *constituted by connections in multiplexed or non-multiplexed mode*, *wherein data transmitted on the one or more standard-bit-rate arteries* (Figures 4 and 5, links 30 and 60) *is multiplexed onto the one or more low-bit-rate arteries* (Figures 4 and 5, any one of T1 link 40,

TITLE: Inverse multiplexing within asynchronous transfer mode communication networks and abstract, Software inverse multiplexing within an Asynchronous Transfer Mode (ATM) communication network is provided by a first ATM switch receiving a stream of ATM cells over a high bandwidth communication link. A Segmentation and Re-assembly (SAR) module associated with the first ATM switch thereafter reassembles the received ATM cells into corresponding user packets. Control data identifying the sequence of assembled user packets are added to each user packet and de-assembled into corresponding ATM cells. The de-assembled ATM cells are then communicated over a plurality of low bandwidth communication links (i.e. multiplexed) to a second ATM switch. Column 2 lines 20-24, The present invention provides a method and apparatus for inverse multiplexing a stream of asynchronous transfer mode (ATM) cells received from a high-bandwidth communication link over a plurality of low-bandwidth communication links) this device being positioned upstream to and downstream from a low-bit-rate artery (column 5 lines 46-67, ATM cells are received by the first ATM switch, such as Samsung STARacer ATM switch, over an OC-3 communication link 30. A routing table (RT) 300 then forwards the received ATM cells to a first Segmentation and Re-assembly (SAR) module or chip 310. A first application module 330 associated with the SAR module 310 then assembles the cells into an AAL5 packet and performs a CRC32 check. If the assemble packet is a "good" packet, the SAR module 310 then interrupts an associated central processing unit (CPU) 320 and places the assembled AAL5 packet into a first designated memory location 340. The CPU 320 then adds a sequence number to the placed Protocol Data User (PDU) or

AAL5 packet and selects a T1 communication link 40 to communicate the packet. While selecting an outgoing communication link, the CPU selects a T1 link with the lowest traffic load using a load-balancing algorithm. The PDU or AAL5 packet with the sequence number stored therein is then communicated back down to the SAR module 310. The SAR module 310 de-assembles the user packet into a number of ATM cells and communicates all of the de-assembled ATM cells associated with the particular user packet over the selected T-1 communication link 40); *and wherein at least one multiplexer device is positioned upstream to and downstream from a data transmission on a low-bit-rate artery* (Figures 4 and 5, switches 20 and 50 are upstream to and downstream from link 40); *and a device* (figure 4 and 5, element 210) *associated with the terminating terminal* (figure 3-5, element 50), *wherein the device is configured to extract the packets from the basic transmission units* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a

conventional manner), *determine whether any packet has been lost*, (column 19 lines 56-63, one problem the receiver has to deal with is to recover the sequence of the AAL5 packets once they are received out-of-order over a plurality of VCs. The nature of the ATM transmission is such that it is allowed to lose an AAL5 packet, but is not allowed to receive the packets out of order. Accordingly, the receiver needs to recognize when a packet has been lost or delivered a bit late and properly re-synchronize the received packets); *and extract the data from the packets* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner).

In regards to claim 16, Cai anticipates the multiplexer device is incorporated into an ATM switch (Figures 4, 5 and 6, ATM switch 20 with multiplexing functionality).

In regards to claim 17, Cai anticipates *network comprises at least two of the multiplexer devices* (Figure 3, ATM switches 20 and 50), *wherein, a first multiplexer*

device is positioned at a first end of a low-bit-rate artery and a second multiplexer device is positioned at a second end of the low-bit-rate artery (Figure 3, two ends of T-1 communication links), *wherein, the first multiplexer device is configured to extract a plurality of packets from first basic transmission units received from different originating terminals* (column 5 lines 25-29, ATM cells are received by the first ATM switch, such as Samsung STARacer ATM switch, over an OC-3 communication link 30. A routing table (RT) 300 then forwards the received ATM cells to a first Segmentation and Re-assembly (SAR) module or chip 310. A first application module 330 associated with the SAR module 310 then assembles the cells into an AAL5 packet and performs a CRC32 check); *multiplex the extracted packets in a second basic transmission unit of a virtual circuit between tile first end and the second end of the low-bit-rate artery for transmission of the send basic transmission unit from the first end to the second end of the low-bit-rate artery* (column 5 lines 53-56 and columns 5-6 lines 40-2, If the assemble packet is a "good" packet, the SAR module 310 then interrupts an associated central processing unit (CPU) 320 and places the assembled AAL5 packet into a first designated memory location 340. The PDU or AAL5 packet with the sequence number stored therein is then communicated back down to the SAR module 310. The SAR module 310 de-assembles the user packet into a number of ATM cells and communicates all of the de-assembled ATM cells associated with the particular user packet over the selected T-1 communication link 40); *and wherein, the second multiplexer device is configured to: receive the second basic transmission unit; extract the packets from second basic transmission unit* (column 6 lines 7-11, A second

application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380); *determine the terminating terminal to which each of the packets belong; and insert each of the packet into a third basic transmission unit at a rate of one packet per unit for transmission to the terminating terminal* (column 6 lines 10-20, A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai et al. (US PAT 6134246, hereinafter Cai) as applied to claims 11 and 15 above and further in view of McCormack et al. (US PAT PUB 2006/0133386, hereinafter McCormack).

In regards to claim 20, Cai teaches all the limitations of claim 11 above.

Cai does not explicitly teach upon determination that any packet has been lost, generate conventional data to replace the lost packet.

McCormack in the same field of endeavor teaches If a packet is lost there is no reason for the receiver to request that the sender resend the packet because the packet will arrive too late to be useful for real-time transmission. Thus, each packet of real-time traffic is sent using UDP. If a packet is lost, its loss will be detected by the RTP protocol in the receiving application. The receiving application will then be able to take appropriate measures to handle that loss. For example, because, statistically, the preceding packet will be similar to the lost packet, the receiving application can replace the lost packet with its preceding packet (paragraph 0059).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cai's system/method by incorporating the steps of upon determination that any packet has been lost, generate conventional data to replace the lost packet as suggested by McCormack. The motivation is that (as suggested by

McCormack, paragraph 0059), If a packet is lost there is no reason for the receiver to request that the sender resend the packet because the packet will arrive too late to be useful for real-time transmission and the receiving application can replace the lost packet with its preceding generated packet; thus enabling an efficient communication. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

In regards to claim 21, Cai does not explicitly teach upon determination that any packet has been lost, generate conventional data to replace the lost packet.

McCormack in the same field of endeavor teaches If a packet is lost there is no reason for the receiver to request that the sender resend the packet because the packet will arrive too late to be useful for real-time transmission. Thus, each packet of real-time traffic is sent using UDP. If a packet is lost, its loss will be detected by the RTP protocol in the receiving application. The receiving application will then be able to take appropriate measures to handle that loss. For example, because, statistically, the preceding packet will be similar to the lost packet, the receiving application can replace the lost packet with its preceding packet (paragraph 0059).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cai's system/method by incorporating the steps of upon determination that any packet has been lost, generate conventional data to replace the lost packet as suggested by McCormack. The motivation is that (as suggested by McCormack, paragraph 0059), If a packet is lost there is no reason for the receiver to

request that the sender resend the packet because the packet will arrive too late to be useful for real-time transmission and the receiving application can replace the lost packet with its preceding generated packet; thus enabling an efficient communication. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

4. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai et al. (US PAT 6134246, hereinafter Cai) in view of Beshai et al.(US PAT 6339488, hereinafter Beshai).

In regards to claim 12, Cai teaches a table (Figure 5, RT 300) configured to determine the at leas tone low-bit-rate artery over which the packets in the second basic transmission units are to be transmitted transmitting a basic transmission unit (AAL5) to the multiplexer wherein the packetization funciton is configured to extract the packets from the basic transmission units intended to travel through a low-bit-rate artery and for packetization of the packets in new basic transmission units in multiplexed mode for each virtual low-bit-rate artery and transmit first basic transmission units to the multiplexer device for transmission through the at least one low-bit-rate artery and further configured to transparently switch basic transmission units as described in the rejections of claim 11 above (Figure 5 and columns 5-6, lines 40-20).

Cai does not explicitly teach a shuffler to carry out a transparent switching of the units that do not have to travel through a low-bit-rate artery.

Beshai in the same field of endeavor teaches a shuffler (An optical shuffler or ADM) to carry out a transparent switching of the units that do not have to travel through a low-bit-rate artery (columns 5-6 lines 47-20).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cai's system/method by incorporating the steps of teach a shuffler to carry out a transparent switching of the units that do not have to travel through a low-bit-rate artery as suggested by Beshai. The motivation is that (as suggested by Beshai, columns 5-6 lines 47-20) shuffler enables a switch to properly direct traffic to correct destination based on traffic parameters and all the traffic control of the channel is performed by these shufflers, including rate control, QOS (quality-of-service) control, etc. as the established paths are rate-regulated, in establishing reliable individual connections within a path. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art

In regards to claim 13, Cai and Beshai do not explicitly teach using AAL2 protocol.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cai and Beshai's system/method by incorporating the steps of using AAL2 protocol. The motivation is that, AAL2 protocol is for efficient when transmitting voice related data and it would be obvious to choose a standard protocol, which suits the network requirement, the best. Known work in one field of endeavor may

prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

In regards to claim 14, Cai teaches apparatus is an ATM switch that includes the multiplexer device, wherein the multiplexer device is configured to switch Common Part Sublayer packets among the several virtual lines constituted by ATM connections in multiplexed or non-multiplexed (Cai: columns 5-6 lines 40-20).

In regards to claim 14 Cai and Beshai do not explicitly teach using AAL2 protocol.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cai and Beshai's system/method by incorporating the steps of using AAL2 protocol. The motivation is that, AAL2 protocol is for efficient when transmitting voice related data and it would be obvious to choose a standard protocol, which suits the network requirement, the best. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces/market place incentives if the variations are predictable to one of ordinary skill in the art.

Allowable Subject Matter

5. Claims 1, 2, 4-7, 9, 10, 18 and 19 are allowed.

Response to Arguments

6. Applicant's arguments see page 10 of the Remarks section, filed 6/30/2008, with respect to the 35 USC 112 second paragraph rejections have been fully considered and

is persuasive. The 35 USC 112 second paragraph rejections have been withdrawn. However, Applicant's amendment necessitated a new 35 USC 112 second paragraph rejection presented in this office action.

7. Applicant's arguments, see pages 10-15 of the Remarks section, filed 6/30/2008, have been fully considered.

Applicant argues (page 11, last paragraph) that it is not readily shown in Cai et al. that data transmitted on at least one standard-bit-rate artery is multiplexed onto at least one low-bit-rate artery, as claimed, notwithstanding the disclosure in Figures 4 and 5 of Cai et al. However, Examiner respectfully disagrees with the Applicant's assertion. Cai does indeed teach the cited limitations. Specifically Cai teaches (Figures 4 and 5, any one of T1 link 40, TITLE: Inverse multiplexing within asynchronous transfer mode communication networks and abstract, Software inverse multiplexing within an Asynchronous Transfer Mode (ATM) communication network is provided by a first ATM switch receiving a stream of ATM cells over a high bandwidth communication link. A Segmentation and Re-assembly (SAR) module associated with the first ATM switch thereafter reassembles the received ATM cells into corresponding user packets. Control data identifying the sequence of assembled user packets are added to each user packet and de-assembled into corresponding ATM cells. The de-assembled ATM cells are then communicated over a plurality of low bandwidth communication links (i.e. multiplexed) to a second ATM switch. Column 2 lines 20-24, The present invention provides a method and apparatus for inverse multiplexing a stream of asynchronous

transfer mode (ATM) cells received from a high-bandwidth communication link over a plurality of low-bandwidth communication links).

Applicant argues (page 12, first paragraph) that Cai does not disclose "an adaptation unit associated with the terminating terminal, wherein the adaptation unit is configured to: extract the packets from the basic transmission units; determine whether any packet in the basic transmission units has been lost; and extract the data from the packets," as claimed. However, Examiner respectfully disagrees with the Applicant's assertion. Cai does indeed teach the cited limitations. Specifically, Cai teaches *adaptation unit is configured to*: *extract the packets from the basic transmission units* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner); *determine whether any packet in the basic transmission units has been lost* (column 19 lines 56-63, one problem the receiver has to deal with is to recover the sequence of the AAL5 packets

once they are received out-of-order over a plurality of VCs. The nature of the ATM transmission is such that it is allowed to lose an AAL5 packet, but is not allowed to receive the packets out of order. Accordingly, the receiver needs to recognize when a packet has been lost or delivered a bit late and properly re-synchronize the received packets); *and extract the data from the packets* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner).

Applicant argues (page 12, paragraph 3) that claim 15 recites "at least one multiplexer device is positioned upstream to and downstream from a data transmission on a low-bit-rate artery," which is not taught in Cai et al. However, Examiner respectfully disagrees with the Applicant's assertion. Cai does indeed teach the cited limitations. Specifically, Cai teaches *one multiplexer device is positioned upstream to and*

downstream from a data transmission on a low-bit-rate artery (Figures 4 and 5, switches 20 and 50 are upstream to and downstream from link 40).

Applicant argues (page 12, last paragraph) that Cai et al. does teach "a device associated with the terminating terminal, wherein the device is configured to extract the packets from the basic transmission units, determine whether any packet has been lost, and extract the data from the packets," as claimed. However, Examiner respectfully disagrees with the Applicant's assertion. Cai does indeed teach the cited limitations. Specifically, Cai teaches *a device* (figure 4 and 5, element 210) *associated with the terminating terminal* (figure 3-5, element 50), *wherein the device is configured to extract the packets from the basic transmission units* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner), *determine whether any packet has been lost*, (column 19 lines 56-63, one problem the receiver has to deal with is to recover the sequence of the AAL5

packets once they are received out-of-order over a plurality of VCs. The nature of the ATM transmission is such that it is allowed to lose an AAL5 packet, but is not allowed to receive the packets out of order. Accordingly, the receiver needs to recognize when a packet has been lost or delivered a bit late and properly re-synchronize the received packets); *and extract the data from the packets* (column 6 lines 3-20, In a similar fashion, the receiver 230 associated with the second ATM switch 50 receives the ATM cells communicated over one of the T-1 communication links 40 and forwards them to a second SAR module 360 associated therewith. A second application module 370 associated with the second SAR module 360 then reassembles the received ATM cells into a PDU or AAL5 packet and places it in a designated memory location 380. A CPU 330 associated with the second ATM switch 50 re-sequences the received AAL5 or PDU packet with other packets received over other T-1 communication links and transmits them back down to the second SAR module 360. The second SAR module 360 then de-assembles the AAL5 packets into a number of ATM cells and utilize a routing table 390 to transmit the cells over an outgoing OC-3 communication link 60 in a conventional manner).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SALMAN AHMED whose telephone number is (571)272-8307. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. A./

Examiner, Art Unit 2619

/Edan Orgad/
Supervisory Patent Examiner, Art Unit 2619